

[illegible]

FIG. 1A

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***** ** ** ** **
SEQ ID NO: 17 GPDGKHRMIMTKRGNTGMILVYHTTDYTNVELLDEPLHSVPNTDMWECVDFYFVSLTND
SEQ ID NO: 2 GPDGKHRMIMGSKNKTKGLVLVYHTTDFTNVWMSDEPLHSVPNTDMWECVDFYFVSLTND
SEQ ID NO: 4 GPDGKHRMIMTKRGNTGMILVYHTTDYTNVELLNEBPMHSVPNTDMWECVDFYFVSLTND
SEQ ID NO: 6 GPDGKHRMIMGSKRGNTGMILVYHTTDYTNVELLDEPLHSVPNTDMWECVDFYFVSLTND
241
***** ** ** **
SEQ ID NO: 17 SALDMAAYGSGIKHVIKESWEGHGMWYSIGTYDAINDKWTDPNPELDVGIGLRCDYGRF
SEQ ID NO: 2 SALDMAAYGSGIKHVIKESWEGHGMWYSIGTYDAINDKWTDPNPELDVGIGLRCDYGRF
SEQ ID NO: 4 SALDMAAYGSGIKHVIKESWEGYGMDFYSIGTYDAFNDKWTDPNPELDVGIGLRCDYGRF
SEQ ID NO: 6 SALDMAAYGSGIKHVIKESWEGHGMWYSIGTYDAINDKWTDPNPELDVGIGLRCDYGRF
301
***** ** ** **
SEQ ID NO: 17 FASKSLYDPLKRRRTWVGYESDSADQDLSRGWATVYNVGRITIVLDRKTGTHLLHPVE
SEQ ID NO: 2 FASKSLYDPLKRRRTWVGYESDKPDQDLSRGWATVYNVGRITIVLDRKTGTHLLHPVE
SEQ ID NO: 4 FASKSIIDPVKRRRTWYAYVGESDNADDLSRGWATVYNVGRITIVLDRKTGTHLLHPVE
SEQ ID NO: 6 FASKSLYDPLKRRRTWYAYVGESDSVDQDLSRGWATVYNVGRITIVLDRKTGTHLLHPVE
361
***** ** ** **
SEQ ID NO: 17 EVESLRNGQEFKEIKLEPGSIIPLDIGTATQLDIVATFEVDQAALNATSETDDIYGCTT
SEQ ID NO: 2 EVESLRNGQEFNEIELEKPGSIIPLDIGSATQLDIVATFEVDQDALKAISETNEEYCTIK
SEQ ID NO: 4 EVESLRNGQEFKEIKLEPGSIIPLDIGTATQLDIVATFEVDQAALNATSETDDNFACIT
SEQ ID NO: 6 EVESLRNGQEFKEIELEPGSIIPLDIGTATQLDIVATFEVDQAALNATSETDDIYGCTT
421
***** ** ** **

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FIG. 1B

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* * * * *
SEQ ID NO: 17 SLGAAQRGSLGPGFGLAVIADGTLSELTPVVFYIAKKADGGVSTHFCTDKLRSSLDYDGER *
SEQ ID NO: 2 SWGAAGRSLGPGFGLAVIADGTLSELTPVVFYIAKKADGGVSTHFCTDKLRSSLDYDGER
SEQ ID NO: 4 SSGAVERGSLGPGFGLAVIADGTLSELTPVVFYIAKKADGGVSTHFCTDKLRSSLDYDGER
SEQ ID NO: 6 SLGAAQRGSLGPGFGLAVIADGTLSELTPVVFYIAKKADGGVSTHFCTDKLRSSLDYDGER 540

* * * * *
SEQ ID NO: 17 VVGGTVPVLDDEELTWRLLLVDHSIVEGFAQGGRTVITSRAYPTKAIYEQAQKLFNNAT *****
SEQ ID NO: 2 VVGGTVPVLDDEELTWRLLLVDHSIVEGFAQGGRTVITSRAYPTKAIYEQAQKLFNNAT *****
SEQ ID NO: 4 VVGGTVPVLDDEELTWRLLLVDHSIVEGFAQGGRTVITSRAYPTKAIYEQAQKLFNNAT *****
SEQ ID NO: 6 VVGGTVPVLDDEELTWRLLLVDHSIVEGFAQGGRTVITSRAYPTKAIYEQAQKLFNNAT ***** 541

* * * * *
SEQ ID NO: 17 GTSVKASLKIWMASAPIHQYPF- *****
SEQ ID NO: 2 GTSVKASLKIWMASAPIHQYPL- *****
SEQ ID NO: 4 GTSVKASLKIWMASAPIHQYEFN *****
SEQ ID NO: 6 GTSVKASLKIWMASAPIHQYSF- ***** 601

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FIG. 1C

Docket No: 88-1463
 Title: Fructan Biosynthetic Enzymes
 Inventor: Stephen M. Allen, et. al.
 Appl. No.: Unknown
 E.I. DuPont de Nemours

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***
SEQ ID NO:21 MSHGKPLPYAVKPLPSDAADGKRTGCMWSACATVLTASAMVVVGATLLAGLRMEQ
SEQ ID NO: 8 -----
SEQ ID NO:10 -----
SEQ ID NO:12 -----
SEQ ID NO:20 MASESSRR-----RSGQEPLAVLVSAKNQSSSEERAGGLRV--
1 -----GDSTSTR-----
60

*****
SEQ ID NO:21 AVDEEAAAGGFPWSNEMLQWORSYHFQTAKNYMSDPNGIMTYRGWYHMFQYNPVGTDW
SEQ ID NO: 8 -----
SEQ ID NO:10 -----
SEQ ID NO:12 -----
SEQ ID NO:20 --DEEAAAG-FPWSNEMLQWORSYHFQTAKNYMSDPNGIMTYRGWYHMFQYNPVGTDW
61 -----
120

***
SEQ ID NO:21 DDGMWGHAVSRNLVQWRITLPIAMVADQWYDILGVLGSMTVLPNGTVMIMITYGAINASA
SEQ ID NO: 8 ---TRWGHAVSRNLVTWRTLPIAMVADQWYDILGVLGSMTVLPNGTVMIMITYGAINASA
SEQ ID NO:10 -----ARD-----DILGVLGSMTVLPNGTVMIMITYGAINASA
SEQ ID NO:12 -----
SEQ ID NO:20 DDGMWGHAVSRNLVTWRTLPIAMVADQWYDILGVLGSMTVLPNGTVMIMITYGAINASA
121 -----
180

*****
SEQ ID NO:21 VEVQCIATPADNDPILLRWTKHPANPVWSPPGVGTDKFRDPMTAWYDESDDTWRTLLG
SEQ ID NO: 8 IEVQCIATPADNDPILLRWTKHPANPVWSPPGVGTDKFRDPMTAWYDESDDTWRTLLG
SEQ ID NO:10 VEVQCIATPADNDPILLRWTKHPANPVWSPPGVGTDKFRDPMTAWYDESDDTWRTLLG
SEQ ID NO:12 VEVQCIATPADNDPILLRWTKHPANPVWSPPGVGTDKFRDPMTAWYDESDDTWRTLLG
SEQ ID NO:20 VEVQCIATPADNDPILLRWTKHPANPVWSPPGVGTDKFRDPMTAWYDESDDTWRTLLG
181 -----
240

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FIG. 2A

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*** *
SEQ ID NO: 21 SKDDHGHHDGTAAMYKTKDFLNVELIPGILHRVVRTGEWECIDFYPVGRSSNDNSSEML
SEQ ID NO: 8 SKDDHGHHDGTAAMYKTKDFLNVELIPGILHRVVRTGEWECIDFYPVGRSSNDNSSEML
SEQ ID NO: 10 SKDDHGHHDGTAAMYKTKDFLNVELIPGILHRVVRTGEWECIDFYPVGRSSNDNSSEML
SEQ ID NO: 12 SKDDHGHHDGTAAMYKTKDFLNVELIPGILHRVVRTGEWECIDFYPVGRSSNDNSSEML
SEQ ID NO: 20 SKDDHGHHDGTAAMYKTKDFLNVELIPGILHRVVRTGEWECIDFYPVGRSSNDNSSEML
241 300

*****
SEQ ID NO: 21 HVLKASMDDERHDYSLGTYSAAANTWTPIDPELDLGLGLRYDWGKFYASTSFYDPAKNR
SEQ ID NO: 8 HVLKASMDDERHDYSLGTYSAAANTWTPIDPELDLGLGLRYDWGKFYASTSFYDPAKNR
SEQ ID NO: 10 HVLKASMDDERHDYSLGTYSAAANTWTPIDPELDLGLGLRYDWGKFYASTSFYDPAKNR
SEQ ID NO: 12 HVLKASMDDERHDYSLGTYSAAANTWTPIDPELDLGLGLRYDWGKFYASTSFYDPAKNR
SEQ ID NO: 20 HVLKASMDDERHDYSLGTYSAAANTWTPIDPELDLGLGLRYDWGKFYASTSFYDPAKNR
301 360

*****
SEQ ID NO: 21 RVLMGYVGEVDSKRADVVKWASIQSVPRITVALDEKTRTNLLLPVVEIETLRNATELTS
SEQ ID NO: 8 RVLMGYVGEVDSKRADVVKWASIQSVPRITVALDEKTRTNLLLPVVEIETLRNATELTS
SEQ ID NO: 10 RVLMGYVGEVDSKRADVVKWASIQSVPRITVALDEKTRTNLLLPVVEIETLRNATELTS
SEQ ID NO: 12 RVLMGYVGEVDSKRADVVKWASIQSVPRITVALDEKTRTNLLLPVVEIETLRNATELTS
SEQ ID NO: 20 RVLMGYVGEVDSKRADVVKWASIQSVPRITVALDEKTRTNLLLPVVEIETLRNATELTS
361 420

***
SEQ ID NO: 21 DVTINTGVSVIHPIRQGTQOLDIEATFHLDASAVAALNEADVGYNCSSSGGAVNRGALGPF
SEQ ID NO: 8 DVTINTGVSVIHPIRQGTQOLDIEATFHLDASAVAALNEADVGYNCSSSGGAVNRGALGPF
SEQ ID NO: 10 DVTINTGVSVIHPIRQGTQOLDIEATFHLDASAVAALNEADVGYNCSSSGGAVNRGALGPF
SEQ ID NO: 12 DVTINTGVSVIHPIRQGTQOLDIEATFHLDASAVAALNEADVGYNCSSSGGAVNRGALGPF
SEQ ID NO: 20 DVTINTGVSVIHPIRQGTQOLDIEATFHLDASAVAALNEADVGYNCSSSGGAVNRGALGPF
421 480

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FIG. 2B

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*****
SEQ ID NO:21  GLLVLAAGDRRGEQTAVFYVSRGLDGGGLHTSFQDELRSSRAKDVTKRVTGSTVPVLGG
SEQ ID NO: 8  GLLVLAAGDRRGEQTAVFYVSRGLDGGGLHTSFQDELRSSRAKDVTKRVTGSTVPVLGG
SEQ ID NO:10  GLLVLAAGDRRGEQTAVFYVSRGLDGGGLHTSFQDELRSSRAKDVTKRVTGSTVPVLGG
SEQ ID NO:12  -----
SEQ ID NO:20  GLLVLAAGDRRGEQTAVFYVSRGLDGGGLHTSFQDELRSSRAKDVTKRVTGSTVPVLGG
481
*****
SEQ ID NO:21  EALSMRVLVDHSIVQGFDMGGRITMTSRVYPMEAYQEAQVILFNNATGASVTAERLNVVHE
SEQ ID NO: 8  EAFSMRVLVDHSIVQGFAMGGRITMTSRVYPMEAYQEAQVILFNNATGASVMAERLNVVHE
SEQ ID NO:10  EAFSMRVLVDHSIVQGFAMGGRITMTSRVYPMEAYQEAQVILFNNATGASVMAERLNVVHE
SEQ ID NO:12  -----ARATMTSRVYPMEAYQEAQVILFNNATGASVTAERLNVVHE
SEQ ID NO:20  EAFSMRVLVDHSIVQGFAMGGRITMTSRVYPMEAYQEAQVILFNNATGASVMAERLNVVHE
541
*****
SEQ ID NO:21  MDSAHNQLSNEDDGMVYLHQVLESRH
SEQ ID NO: 8  MDSAHNQLSNMDDYSYVQ-----
SEQ ID NO:10  MDSAHNQLSNMDDHSYVQ-----
SEQ ID NO:12  MDSAHNQLSNMDDYSYVQ-----
SEQ ID NO:20  MDSAHNQLSNMDDHSYVQ-----
601
625

```

FIG. 2C

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1
MMASSTTTTPLLIIHDDPENLPELTGSPPTTRRLSTAKVLGSILVSVLIGALVALINNQTYESP-----
MMASSTTSPPLIIHDDPENLQEPFTGVRPSPSTAKALCVTLVSMWVICGLVAINSNQTPQPVQVANSHQG
MMASSTTTTPLLIIHDDPENLPELTGSPPTTRRLSTAKVLGSILVSVLTCALVALINNQTYEPP-----
1
70
**** **** ** ***** ** * **** ***** ***** ***** *****
SATFTVQTLPNIDLKEVPGLDSSAEVEWQSTVHFQDKNFI SDPDGPMYHMGWYHLFYQNPQSAIWG
AATFTTQLPKIDMKVPGELDSGADVQWORSAYHFQDKNYI SDPDGPMYHMGWYHLFYQNPESAIIWG
AATFATQTLFNIDLKEVPGLDSSAEVEWQRSAYHFQDKNFI SDPDGPMYHMGWYHLFYQNPESAIWG
140
61
***** ***** ***** ***** ***** ***** ***** *****
NITWGHSVSKDMINWHLPFAMYPDHWYDIEGVMTGSATVLPNGQI IMLYSGNAYDLDSOVQCLAYAVNSS
NITWGHSVSKDMINWHLPFAMYPDHWYDIEGVMTGSATVLPNGEI IMLYTCNAYDLDSOVQCLAYAVNSS
NITWGHSVSKDMINWHLPFAMYPDHWYDIEGVMTGSATVLPNGQI IMLYTCNAYDLDSOVQCLAYAVNSS
141
***** ***** ***** ***** ***** ***** ***** *****
DPLLIIEWKKYEGNPVLLPPGCVGYKDFRDPSTLWSPDGGEYRMVWGSKHNETIGCALIYHTTNTFTHFELK
DPLLIIEWKKYEGNPVLLPPGCVGYKDFRDPSTLWSPDGGEYRMVWGSKHNETIGCALIYHTTNTFTHFELK
DPLLIIEWKKYEGNPVLPFPFGVGYKDFRDPSTLWSPDGGEYRMVWGSKHNETIGCALIYHTTNTFTHFELK
280
211
***** ***** ***** ***** ***** ***** ***** *****
EEVLHVAHPHTGMWECVDLYPVSVTHTTNGLMDVNDGPNVKVYLKQSGDEDRHDWVAIGSYDI VNDKWYPPD
EEVLHVAHPHTGMWECVDLYPVSVTHTTNGLMDVNDGPNVKVYLKQSGDEDRHDWVAIGSYDWNKWPDD
EEVLHVAHPHTGMWECVDLYPVSVTHTTNGLMDVNDGPNVKVYLKQSGDEDRHDWVAIGSYDVVNDKWYPPD
281
350

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FIG. 3A

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*****
SEQ ID NO:18 PENDVGIGLRVDFGKFYASKTFYDQHKRRVLWGYVGETDPQKYDLSKGWANIILNI PRTVVLDLETKTNLIQ *****
SEQ ID NO:14 PENDVGIGLRVDFGKFYASKTFYDQHKRRVLWGYVGETDPQKYDLSKGWANIILNI PRTVVLDLETKTNLIQ *****
SEQ ID NO:16 PENDVGIGLRVDFGKFYASKTFYDQHKRRVLWGYVGETDPQKYDLSKGWANIILNI PRTVVLDLETKTNLIQ *****
351

*****
SEQ ID NO:18 WPIETENLRSKKYDEFKDVLRPGALVPLEIGTATQLDIVATFEIDQKMLESTLEADVLFNCTTSGSVAR *****
SEQ ID NO:14 WPIETENLRSKKYDEFKDVLRPGSLIPLIEIGTATQLDIVATFEVDQKMLESTLEADVLFNCTTSGSVAR *****
SEQ ID NO:16 WPIETENLRSKTYDEFKDVLRPGSLVPLEIGTATQLDIVATFEIDQKMLESTLEADVLFNCTTSGSVAR *****
423

*****
SEQ ID NO:18 SVLGPFVGWVLADAQORSEQLPVYFYIAKDIDGTSRTYFCADETRSSKDVSGKWVYGSVPVLPGEKYNMRL *****
SEQ ID NO:14 SVLGPFVGWVLADAQORTEQLPVYFYIAKDDTGTSRTYFCADETRSSKDVGVGKWVYGSVPVLPFNEKYNMRL *****
SEQ ID NO:16 GALGPFVGWVLADAQORSEQLPVYFYIAKDIDGTSRTYFCADETRSSKDVSGKWVYGSVPVLPGEKYNMRL *****
495

*****
SEQ ID NO:18 LVDHSI VEGFQNGRTVVTSRVYPTKAIYNAAKVFLFNNAITGISVKASIKIKWKGAEELNPFPLPGWTFEL *****
SEQ ID NO:14 LVDHSI VEGFQNGRTVVTSRVYPTKAIYNAAKVFLFNNAITGIRVKASVKIKWMAEELNPFPLPGWTFEL *****
SEQ ID NO:16 LVDHSI VEGFQNGRTVVTSRVYPTKAIYNAAKVFLFNNAITGISVKASIKIKWMAEELNPFPLPGWTFEL *****
564

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FIG. 3B